

**REMARKS/ARGUMENTS**

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-17 are pending in the present application. Claims 1-4, 6 and 7 have been amended and claims 8-17 have been added by the present amendment.

In the outstanding office action, claims 1-7 were rejected under 35 U.S.C. §103(a) as unpatentable over Applicants Admitted Prior Art (AAPA) in view of Jedwab et al.

Claims 1-7 stand rejected under 35 U.S.C. 103(a) as unpatentable over AAPA in view of Jedwab et al. This rejection is respectfully traversed.

Amended independent claim 1 is directed to an encoding method of an RS (Reed-Solomon) code in bit level. The method includes generating a binary equivalence matrix of the RS code by multiplying a non-binary systematic generator matrix and a binary information sequence of the RS code such that the generated binary equivalence matrix includes row and columns which are  $m$  times rows and columns of the non-binary matrix, and where symbols of the non-binary matrix have a  $GF(2^m)$  dimension. The method also includes generating row and column vectors using the binary equivalence of the RS code as a component code.

On the contrary, as shown in Figure 1 of AAPA, the encoding unit 120 encodes non-binary information from the source information inputting unit 110 (see page 9, lines 20 and 21, which indicates the original matrix does not include binary

symbols, but rather is a non-binary matrix). See also page 3, lines 20-23, which indicates that the RS code has non-binary characteristics and the number of branches of a respective trellis node is non-binary. Therefore, the decoding process of the algorithms in the respective node are more complex than for the binary branches. Further, the size of the interleaver is small according to the symbol dimension compared to the size of the block which performs the decoding. Therefore, it is inefficient to use an iterative decoder in which the performance of the algorithms depend on the size of the interleaver (see page 3, line 24 to page 4, line 2, for example).

There is no generation of a binary equivalence matrix of the RS code such that the generated binary equivalence matrix includes row and columns which are  $m$  times rows and columns of the non-binary matrix, and where symbols of the non-binary matrix have a  $GF(2^m)$  dimension in AAPA. Jedwab et al. also does not teach or suggest these features. Similar comments apply to independent claims 2, 3 and 6.

Therefore, it is respectfully submitted that independent claims 1-3 and 6 and each of the claims depending therefrom are allowable.

Further, new claims 8-17 have been added to set forth the invention in a varying scope, and applicants submit that the new claims are supported by the originally filed specification. It is respectfully submitted the new claims are allowable for similar reasons as discussed above.

Further, the specification and abstract have been amended to correct minor informalities. It is believed no new matter has been added.

### **CONCLUSION**

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **David A. Bilodeau**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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